AMENDMENTS TO THE SPECIFICATION:

Please replace paragraph **[0009]** with the following amended paragraph.

[0009] The second mode of operation is the converse of the first. The ~~piezoelectric~~ diaphragm ~~is used~~ is subjected to a force, pressure, or displacement which will cause the diaphragm together with the piezoelectric material to bend or move. The physical movement of the diaphragm along with the piezoelectric material then causes polarization to take place in the piezoelectric material and a charge to be present on the electrodes. The diaphragm can thus be used as a sensor.

Please replace paragraph **[0015]** with the following amended paragraph.

[0015] Figure 2 ~~is an enlargement of a portion of the piezoelectric transducer shown in Figure 1~~ a cross-sectional view of a second embodiment of a piezoelectric transducer according to the present invetntion.

Please replace paragraph **[0016]** with the following amended paragraph.

[0016] Figure 3 is a ~~top view of a mesa structure in the embodiment shown in Figure 1~~ cross-sectional view of a piezoelectric transducer of the present invention in a first operational state.

Please replace paragraph **[0017]** with the following amended paragraph.

[0017] Figure 4 is a cross-sectional view of a ~~second embodiment of a~~ piezoelectric transducer ~~according to~~ of the present invention in a second operational state.

Please replace paragraph **[0026]** with the following amended paragraph.

[0026] Turning now to Figures ~~1-3~~ 1-4, a piezoelectric transducer 1 having a chamber diaphragm 10 over a chamber 16 with chamber support structure 34 is shown. It should be noted that the shape of the chamber diaphragm 10 and the piezoelectric material element 22 are for exemplary purposes only and many variants are possible.

Please replace paragraph **[0042]** with the following amended paragraph.

[0042] The mesas 12, 62 may be made out of a variety of materials such as the same material as used for the chamber diaphragm 10, oxides, nitrides, polyimides, metals and ceramics, among others. The mesa thickness can be any size so long as the mesas 12, 62 and the chamber diaphragm 10 can still be bent by the piezoelectric material elements 22, 60. The minimum mesa thickness Tm1 of mesa 12, when the piezoelectric material width Wa1 is greater than the mesa width Wm, should be chosen should be such that the sum of the thicknesses of the mesa 12, insulative layer 40, and electrical interconnect layer 18 is greater than the sum of the thicknesses of the insulative layer 40, electrical interconnect layer 18, and the dielectric layer 20. This will assure that the piezoelectric material element 22 is in direct contact only on the surface of the mesa 12 and not the top of the dielectric layer 20. The mesa thickness Tm2, and mesa ~~thicknes~~ thickness TM1 when the piezoelectric material width Wa1 is not ~~greatr~~ greater than the mesa ~~wideth~~ width Wm, has no minimum. It should be noted that it is possible to build the piezoelectric transducer 1 in a bimorphic configuration, such as shown in ~~Figure 6~~Figure 2, utilizing only one mesa on one of the chamber diaphragm 10 surfaces, either chamber diaphragm upper surface 38 or chamber diaphragm lower surface 36, that is setting one of either mesa thickness Tm1 or mesa thickness Tm2 equal to zero. The mesa thicknesses Tm1, Tm2 used for a particular application will be determined by performance and manufacturability constraints. It should also be noted that although the

mesa thicknesses Tm1, Tm2 are shown as being substantially the same, they need not be and may vary considerably from each other. If the mesa thickness Tm1, Tm2 is greater than approximately 10% of the chamber diaphragm thickness Tc, there is an added mechanical advantage to the respective piezoelectric material element 22, 60. This is because expansion or contraction of the piezoelectric material element 22 will create a greater bending moment on the chamber diaphragm 10 when the piezoelectric material element 22; 60 is further displaced from the neutral surface N of the diaphragm 10. The neutral surface N is defined as the surface within the diaphragm 10 and the adjoining structures, such as the mesas 12, 60, where the shear stress passes through zero. That is, the shear stresses are compressive on one side of the neutral surface N and tensile on the other. There are many combinations of dimensions and properties of the chamber diaphragm 10, mesa12, and piezoelectric material element 22 that will provide acceptable performance characteristics.

Please replace paragraph [**0051**] with the following amended paragraph.

[0051] ~~Figure 7~~ Figure 3 shows the condition where a positive voltage is applied to electrical contact 32. This results in a net positive charge q+ on the upper surface of piezoelectric material element 22 and an electric field across the piezoelectric material element 22. The piezoelectric material element 22 will respond with a net upward motion of the upper surface of the piezoelectric material element 22 caused by the extension of the piezoelectric material element 22 in the plane of the mesa 12 and the subsequent bending of the unimorph structure. The chamber diaphragm 10, electrical interconnect layer 18, insulative layer 40, and mesa 12 will also flex in an upward direction. For comparison, line L shows the previous position chamber diaphragm lower surface 36, when no voltages have been applied,. As long as the field strength within the piezoelectric material element 22 remains less than approximately 1/3 of the coercive field of the piezoelectric material element 22

then the piezoelectric material element 22 will respond approximately linearly to the amount of positive voltage applied to the electrical contact 32. Higher voltages will result in a larger upward motion and smaller voltages will result in a smaller upward motion. If the field strength exceeds approximately 1/3 of the coercive field the piezoelectric material element 22 will begin to show a non-linear response and the polarization of the piezoelectric material element 22 may degrade over time. The specific voltages used will depend on the system function, the characteristics of the piezoelectric material used, its thickness, the characteristics of chamber diaphragm 10, and the characteristics of the mesa 12.

Please delete paragraph **[0018]** which starts with “Figure 5 is a top view”.

Please delete paragraph **[0019]** which starts with “Figure 6 is a cross-sectional view”.

Please delete paragraph **[0020]** which starts with “Figure 7 is a cross-sectional view”.

Please delete paragraph **[0021]** which starts with “Figure 8 is a cross-sectional view”.

Please delete paragraph **[0022]** which starts with “Figure 9 is a cross-sectional view”.

Please delete paragraph **[0023]** which starts with “Figure 10 is a cross-sectional view”.

Please delete paragraph **[0024]** which starts with “Figure 11 is a cross-sectional view”.

AMENDMENTS TO THE DRAWINGS:

The attached sheets of drawings include changes to Figures 1 - 4. The changes to Figures 1 – 4 are to provide drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121 as required in the Notice to File Missing Parts of a Non Provisional Application. Additionally, there are further revisions to Figure 1 to remove spurious reference numbers and lead lines to make the figure consistent with the specification. No new matter is added.

Attachment: Replacement Sheet

Annotated Sheet Showing Changes